WORKING WITH WHITEHEADS (*MOHOUA ALBICILLA*) AND THEIR NESTS

IAN G. McLEAN

Dept of Zoology, University of Canterbury, Christchurch

ABSTRACT

I describe techniques for capturing whiteheads (*Mohoua albicilla*) by mist-netting, techniques for finding whitehead nests at different stages of breeding, and techniques for working with whitehead nests. Whiteheads are likely to abandon nests interfered with during early stages; I only checked nests when the birds were absent. Mist-netting was only conducted when there were chicks in the nest. Nests may be found during all stages of breeding. Behaviour of the breeding group can be used to locate nests during incubation and the nestling period.

INTRODUCTION

Many small passerines are intolerant of interference at their nests (Pettingill 1970). If the species is endangered, or "at risk", it is particularly important that researchers minimise the chances of nests being abandoned due to interference. Although studies on the breeding biology of most native New Zealand forest bird species have now been conducted, very little detailed information is available on how the various researchers captured birds and found nests, or the problems that they encountered. Some New Zealand species appear to accept almost any interference by researchers (e.g. *Petroica traversi*, *Gerygone albofrontata*, Cemmick & Veitch 1985; *Rhipidura fuliginosa*, pers. obs.), but this may not always be the case. Here, I provide a description of the techniques developed during an intensive study of breeding by Whiteheads (*Mohoua albicilla*) on Little Barrier Island.

Whiteheads spend most of their time in the canopy, and form flocks through most of the year. They are extremely vocal, but are often difficult to see clearly for band-reading. Mist-netting appears to be the best method for capturing them.

Whitehead nests are extraordinarily difficult to locate. They are usually placed in the canopy in a dense clump of twigs and leaves (McLean & Gill, unpubl. data). Whiteheads are cooperative breeders (more than two birds are often involved in rearing chicks). However, only the female builds and incubates and her behaviour is very secretive when approaching the nest (McLean, in press). Once the chicks hatch, the number of birds feeding them ranges from two (the breeding pair) to six, and birds carrying food can be followed to the nest. However, the male may gather food to feed the female during both building and laying (courtship feeding), and during incubation when she leaves the nest to feed. So observation of a bird collecting food does not always mean a nest with chicks. The nestlings may be heard calling from about seven days of age, and after about ten days they become very loud if several are in the nest. Fledging is at 16 to 19 days (McLean & Gill, unpubl. data).

CAPTURING AND BANDING WHITEHEADS

I captured whiteheads during the breeding season only. Two techniques were developed, the second being the most effective.

TECHNIQUE 1

This involved setting nets across flight paths used by whiteheads during several previous days of observation. Success was moderate, and was constrained by a need to know the movements of the birds in some detail. A further limitation was that nets were most effective if set in the canopy, which is often very high in whitehead habitat.

TECHNIQUE 2

Birds with nestlings were netted when the chicks were about 7 days old. The net was placed well up in the canopy near to the nest. Playback of song and a fledgling call were used to attract birds into the net. A stuffed whitehead was placed near the bottom of the net, and playback was through two amplified speakers placed one on each side of the net. A switching box was used so that vocalisations came from the other side of the net from the approaching birds. Song was effective for males, but less so for females. The fledgling call used was not the usual begging buzz given almost continuously by young whiteheads but a shorter call that was heard only rarely, and appeared to be used to aid the adults in locating the chick (Fig. 1). The begging buzz was ineffective for attracting adults, but the "location" call attracted all members of the group. Recordings of the location call were obtained by placing a fledgling or advanced nestling in a black bag and playing the twitters of an approaching adult through a speaker. The chick responded with the location call.

C.R. Veitch and B.J. Gill have captured many whiteheads outside the breeding season by setting large numbers of nets and waiting for flocks to fly into them. This technique is only successful if a large number of nets are set and many people are available to monitor them.

Standard procedures were used for handling and banding adult whiteheads, using "B" size bands. Three bands could be placed on an adult's leg.

Nestlings were more difficult to work with. Their legs were too small for banding before 7 days of age, but they could not be returned to the nest after 10-11 days of age, because they would immediately jump out. Thus nestlings were banded at age 8-10 days. Only two bands would fit on the leg of a 9-day chick. It was important to take and return all chicks at once for banding. One 10-day old chick jumped from the nest when it was left while its nest-mates were taken for banding.

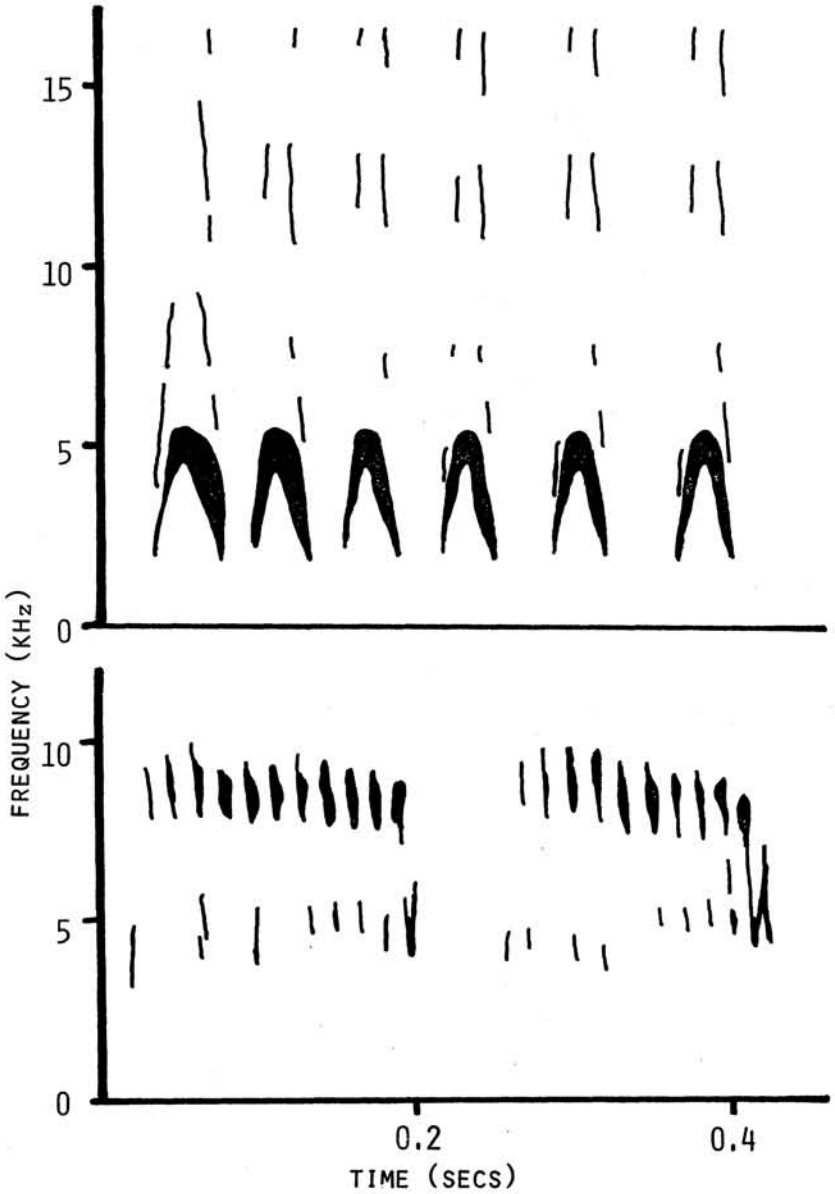

Figure 1. Wide-band sonagraphs of the "location" call (above) and the usual begging buzz (below) given by fledgling whiteheads. The location call functioned to tell an adult of the chicks' location, and was the most effective vocalisation used for attracting adults into mist-nets. The begging buzz did not attract adults to mist-nets.

Because the birds were difficult to see, I adopted several conventions for band reading. All birds carried four bands (two on each leg). Metal bands were used in different leg positions depending on age of bird and year banded (hence this information was usually available even with an incomplete reading). Band combinations were only accepted after two independent readings.

FINDING AND WORKING WITH NESTS

BUILDING

The female carried material some distance, often working alone while the male sang somewhere nearby. She rarely called while flying to the nest site unless accompanied by the male. She did not build consistently for long periods and did not always return to the same site to gather more material. Nests were built over several days. Persistence and several observers (one to call to the other that the female is approaching along the suspected flight path) usually resulted in the nest being found.

Observation of the pair moving closely together and courtship feeding usually meant that the female was not actively building. If the nest was located in an area where canopy vegetation was dense, she moved through dense clumps on her approach to the nest site. My approach was to keep my eyes on the bird continuously. I found running after her when she went out of view to be ineffective, as she was not usually relocated. Rather, I waited at the same spot for her to pass by again.

LAYING

Up to about ten days elapsed between completion of a nest and initiation of laying. During this period the pair were usually found close together, with the male often feeding the female. They occasionally approached the nest, usually with twittering and possibly wing fluttering by the female. Several nests were found because I constantly scanned vegetation around birds behaving in this way. However, I have found no way to distinguish between behaviour immediately prior to building, and during the post-building/pre-laying and laying periods. During all these periods the pair twittered constantly to each other, the male fed the female, and they occasionally duetted (both giving the same song). True song (that given by the male during song-post singing) was not usually given while the pair were together like this.

Copulation was characterised by constant chasing for up to several hours with the male following 10 to 50 cm behind the female. The behaviour will be described in more detail elsewhere (McLean & Gill, in prep.). However, the chasing was distinctive, and could be used to determine the stage of breeding for the pair.

INCUBATION

Nests were surprisingly easy to find during incubation. The secret was to wait for the female to come off the nest for a short feeding break. She always joined her group, and was usually the bird in front as the group approached the nest on her return.

Males sang for a portion of the time that females incubated, usually from a song-post >30 m from the nest. When the female came off the nest she almost always waited for the male to sing, then flew directly to him. She often twittered or chattered as she approached; he immediately stopped singing and joined her. The vocal patterns could be used to determine when the female came off the nest.

Her feeding behaviour was very characteristic at this time. She moved and fed very fast, occasionally begged from the male, and was easily identifiable as the bird in the group behaving frantically. I have found several nests by following a frantically feeding bird.

After 5-20 mins, she returned to the nest, feeding as she went, so her approach was relatively slow. She was escorted by the male and any other members of the flock, but they approached no closer than 20 m. The last 20 m she covered alone, moving quietly through thick vegetation while the rest of the group moved away calling loudly. I often lost her at this point, however the male always sang just after she moved off, indicating to the observer that a nest was near. I located many nests by waiting 30 mins, then returning to the location where she was lost to wait for her next return to the nest. I found that patience, primarily involving waiting for the bird to tell you what she was doing, was much more successful for locating nests than was chasing after the female.

Whiteheads deserted nests if disturbed during incubation (I have disturbed incubating females off five nests; three were abandoned). To check a nest, I always waited for the female to leave, then allowed a maximum of five mins to check the contents. The birds' movements were easily monitored by ear. I found that ladders could be left against the nest tree if I had to get away quickly without causing any disturbance. I often set up the ladder during one absence, and checked the nest during her next break. For high nests, I used one person up a ladder manipulating a mirror on a long pole, while another person viewed the mirror through binoculars.

The female could be very difficult to see when on the nest, even if the nest was easy to see into (most were not). I only checked nests which I saw the female leave, even if I thought she was off when I arrived.

NESTLING

Adults accumulated food in their throat pouch as well as in the bill. The group usually fed the chicks *en masse*, and up to an hour elapsed between feedings. Following birds carrying food was subject to the same problems as following incubating females, but once a direction of movement with full bills was determined, one could wait on that flight path for them to come by again. Not all birds in a group would necessarily feed the chicks or carry food, even if they accompany the others who were feeding.

Once the chicks reached about 7 days of age, they became audible, and after about day 10 they could be heard from 50-100 m away. Loud calls may indicate chicks which are too old to be replaced in the nest after banding.

Fledgling

Fledglings did not always sit together after leaving the nest, thus it was difficult to make an accurate count of the number fledged. They did not respond to playback and were almost impossible to capture by mist-netting unless a well-used flight path was available to set the net across. Renesting could occur any time from late in the nestling period, probably depending on the size of the group available to care for the fledglings. However, many birds had only one nest in a breeding season.

ACKNOWLEDGEMENTS

I thank L.P. Curthoys, B.J. Gill, and C.R. Veitch for assistance in the field. A. and M. Dobbins provided logistic support on Little Barrier Island. Permission to work on Little Barrier was given by the Hauraki Gulf Maritime Park Board. This research was supported by the New Zealand Lottery Board, the Auckland Institute and Museum, and the University Grants Committee.

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